STCG Subcon Subgroup Meeting Minutes

August 22, 2001

Welcome/Announcements (Arlene Tortoso)

Arlene opened the meeting. Scott Petersen mentioned that there would be a Hanford S&T Needs Update meeting the week of October 22. All the Focus Areas will be invited to Hanford to hear the project managers and the STCG Subgroups talk about the FY02 S&T needs.

Bill Bonner stated that an ASTD call for proposals was expected between late August and late September. Each Focus Area was given $2.5 million, and a limited number of proposals will be funded. Bill also mentioned that the EMSP would focus on subsurface issues this year. Their call for proposals is expected in the October time frame.

Arlene reported that the cone penetrometer DNAPL ASTD proposal did not get funded. Return on investment was a key criterion that caused the selection of many bioremediation proposals. Our proposal was good and had a lot of support from Savannah River.

Review Minutes from Last Meeting (Facilitator)

The facilitator reviewed the minutes from the April 17, 2001 meeting. No changes were requested.

Status Updates

ITRD Projects (Arlene Tortoso)

There have not been any meetings on Hanford's ITRD Projects recently. The 200-Area Carbon Tetrachloride ITRD Project is currently evaluating two additional carbon tet proposals: 1) PNNL modeling to look for the disperse carbon tet plume and determine where to sample, and 2) six-phase heating and the feasibility of injecting graphite rods in a slurry.

The Carbon Tet ITRD Project has a report due at the end of December that will tie into the five-year ROD review for carbon tet. Another Carbon Tet ITRD meeting will be held at Hanford in the future to focus on remediation technologies. The Carbon Tet ITRD Project was good in pointing out the need for more characterization of the carbon tet plume at Hanford.

The four appendices (natural attenuation, soil flushing, modeling, and phosphate stabilization) to the Strontium-90 ITRD Project summary report were sent to the team for review and comment. The project's final report is due at the end of October. DOE-RL and Ecology need to use the results to make a decision on how to move forward with the Sr-90 plume in the 100-N Area.

The ITRD Program was set up to identify potential technology solutions to Site problems, not to do science or technology development. They never had enough funding for that. SCFA has other funds for technology development.

NETL (Scott Petersen)

NETL is funded by SCFA Industry Programs. We've tapped into it for a couple of projects using the cone penetrometer plus another technology to enhance subsurface penetration: 1) ODEX, which shows good penetration through boulders, and 2) a laser to blast through obstructions. A 2.5-year contract will be awarded to AEA for Hanford work in September or October. We will get some better cone penetrometer results and some cost data in the future from applications in different areas of the Site.

A new NETL solicitation will be on the web soon regarding alternative means to replace permeable reactive barriers (horizontal boreholes). Eight companies came to Hanford for the tour and briefing. We hope to get proposals back in the November-December time frame.

There is another potential NETL project using LIBS on the cone penetrometer platform. However, funding for that project is uncertain for next year.

MSE Work – Uranium Plumes and Groundwater Sensors (Scott Petersen and Ron Jackson)

MSE is working on two technology activities at Hanford. First they evaluated groundwater sensors for a suite of contaminants (Cr-6, Sr-90, carbon tet), produced a report, and identified a tritium sensor to be tested.

They are also enhancing/refining the model for uranium plumes in the vadose zone and the groundwater. They are doing uranium field work at the UP-1 operable unit, concurrent with another BHI activity that drilled a groundwater monitoring well. MSE took soil samples for PNNL to evaluate for uranium. The product of this effort is a geochemical model of how uranium plumes move in the Hanford subsurface. Ecology has been very supportive of MSE's work. We need their results to decide what technologies make sense to remediate the uranium plumes, since the pump-and-treat operation has not been effective.

TTPs (Bill Bonner)

Bill described the status of PNNL's continuing work on several TTPs funded by SCFA:

- JCCEM international groundwater modeling work with the Russians, with spin-off activities to Hanford.
- Glendon Gee's vadose zone monitoring at the Hanford surface barrier site.
- Andy Ward's hydraulic characterization of the vadose zone using an advanced tensiometer.

Jerry White and Wayne Martin also have TTPs to support the SCFA "Lead Lab" activities. This program supplies expertise for quick-turnaround studies and short-term technical assistance to

DOE sites as needed. We used this program to access experts on the tritium in the wells at the 618-11 burial ground last year.

SCFA Strategic Targets Meeting in Golden (Scott Petersen)

SCFA held a meeting in Golden, Colorado on July 23-27, 2001 to focus on problem solving, not just technology development. They asked the Lead Lab to define technical problem areas that:

- Highlight the most important areas that require S&T investments
- Define a balanced investment portfolio (i.e., basic science with applied activities)
- Ultimately support SCFA management decision-making.

The Lead Lab identified the following 14 SCFA Technical Targets (critically important research and development needs for S&T investments):

- Metals and radionuclide source zone stabilization and treatment
- Organic source zone stabilization and treatment
- Design, construct, and verify long-term containment systems
- Subsurface access and delivery
- Methods to verify and validate performance
- Improving the technical basis for setting remediation goals
- Biogeochemical processes that determine contaminant fate
- Treatment of primary plumes
- Sustainable technologies for dilute plumes
- Tritium management and risk reduction
- Techniques and technologies that support characterization
- Strongly heterogeneous systems
- Fundamental environmental process
- Integrated storage-treatment concepts – "Smart Storage"

The next steps for the Technical Targets are to:

- Present and discuss Technical Targets at the SCFA Program Definition Meeting in Charlotte, NC
- Reconvene the Technical Targets Group to refine the list
- Possible uses for Technical Targets:
    - Develop calls for proposals
    - Replace work packages

Current SCFA Work Packages:

- WP1 – Characterization, monitoring, modeling, and analysis in the vadose zone
- WP2 – Subsurface barrier system in the vadose zone
- WP3 – Stabilization of contamination in the vadose zone
- WP4 – Long-lived surface caps
- WP5 – In situ passive flow reactive barrier systems
- WP6 – Advanced bioremediation and enhanced natural attenuation
- WP7 – Vadose zone chemical treatment systems

- WP8 – Saturated zone chemical treatment systems
- WP9 – Deep subsurface access and delivery of groundwater treatment methods
- WP10 – Hot spot removal from landfills and subsurface sources
- Waste containment/stabilization verification and modeling

SCFA Program Definition Meeting at End of August (Jerry White)

This meeting was scheduled by SCFA to figure out what to do with the Technical Targets listed above. Jerry will be there to represent the end-user perspective. Gerald Boyd's new R&D Program Plan is continuing to identify major objectives for SCFA to focus on.

618-10/11 Burial Grounds S&T Needs and the FY02 Needs Update Process (Mike Truex)

At the April 17 Subgroup meeting, Mike presented the three new S&T needs for the 618-10/11 burial grounds and the two modified needs on TRU burial grounds. These needs statements were distributed electronically to all Subgroup members for review, and a few comments were received. The Groundwater/Vadose Zone Integration Project will update the existing integrated needs. The remediation needs will also be updated. The draft S&T needs will be distributed electronically for STCG review in early September. The Subgroup will endorse the needs package at the October 17 meeting and they will be submitted to DOE-RL by November 4. These needs are for FY03 funding.

There is a Technology Insertion Point in 2006 for the 618-10/11 burial grounds, and Ecology wants to see progress toward it. We hope to be doing S&T roadmaps as a follow-on to the February 2001 Hanford S&T Assessment. Hanford wants to take the lead on producing a national TRU retrieval and handling roadmap.

Status of Ex-Tank Leak Detection Technology Demonstrations (Jerry Cammann)

Jerry works for CHG's Waste Tank Retrieval and Disposal Program. Tank leak detection is a joint effort by CHG, PNNL, and Vista Engineering. Jerry provided an interesting observation that leaks have usually come on the sides of the tanks and the average flow rate has been 1.8 gallons per hour.

Retrieval of SSTs is designed to use very little water. They are currently looking for alternatives to past-practice sluicing. Saltcake dissolution with low-volume sprinklers, crawler-based confined sluicing, and the AEAT Power Fluidics System all use relatively small amounts of liquids.

Improved external tank technologies are being demonstrated for early leak detection without shutting down retrieval operations. Volume-integrating measurements provide better sensitivity than the point-source measurements used in the past. This year ORP is doing a technology down-select process (going from six candidate technologies down to two). They will test the two most promising technologies next fiscal year for their capability to detect a leak, determine

the location of the leak, and quantify the volume of the leak.

The Groundwater/Vadose Zone Integration Project held an Advanced Characterization Workshop at Hanford in January 2000. More than 20 technologies were presented and screened to identify better moisture sensing and plume tracking in the Hanford vadose zone. Six technologies were selected for proof-of-concept testing at the 105-A Mock Tank Leak Site in the 200-East Area during August:

- Partitioning interwell tracer tests (PITT)
- Electrical resistivity tomography (ERT)
- Electromagnetic induction (EMI)
- High-resolution resistivity (HRR)
- Cross-borehole radar (XBR)
- Cross-borehole seismic (XBS)

The goal is to deploy one or more of these technologies in support of SST retrieval. The technology that is selected should be able to detect a leak in accordance with the "Functions and Requirements" established for each waste retrieval project. It is estimated that the current baseline technology, using in-tank material balance and ex-tank spectral gamma-ray logging, can resolve potential tank leaks on the order of 8,000 gallons. For each technology, information is being collected for an engineering evaluation of the following attributes:

- Performance
- Implementability by tank farm operators
- Technology maturity
- Operations integration
- Deployability using existing infrastructure
- Life-cycle costs

Draft reports will be prepared by the end of this fiscal year on the performance of the six technologies. The test results will be published on the Groundwater/Vadose Zone Integration Project website at the end of September.

Surface Barrier Workshop Outcomes (Bryan Foley)

Bryan has requested a meeting with Pete Knollmeyer to discuss the outcomes of the STCG Surface Barrier Workshop held on July 18. Pete will be the champion for surface barrier technology at Hanford. A working group may be formed to address some of the actions from the workshop.

Scott McMullin (SCFA) has already taken some steps to communicate surface barrier needs across the relevant Focus Areas. Scott liked hearing from our Hanford end-users at the workshop. He will look at our set of needs, determine what's already being done throughout the Complex, and identify the gaps that still need to be addressed.

Jerry White asked if the workshop had been valuable. Bryan said yes, it was a success due to the

number of end-users present and the excellent information sharing that occurred. But Bryan is concerned about setting up a working group that doesn't do anything. We need to develop a unified strategic perspective for the Site, and perhaps we will develop an S&T roadmap for surface barrier implementation.

Planning for STCG Management Council Workshop on Groundwater Remediation

The next STCG Management Council Workshop was supposed to be focused on Groundwater Remediation. It was being planned for the November time frame.

Bryan provided the following recommendations for the people who will be in charge of planning future workshops:

- Figure out the right players.
- Communicate the workshop objectives to them. (These objectives should be published on the STCG website.)
- Develop the agenda.
- Identify all interested parties.
- Solicit their input on agenda items.
- Identify the senior management champion for the technology area.

Jerry White asked what outcome we would want to achieve with a Groundwater Remediation Workshop since there won't be as many end-users. Should we include monitoring and sensor technology? What about regulatory processes? This workshop should be tied in with the Groundwater/Vadose Zone Integration Project's groundwater remediation roadmap that is planned for next year.

Mike Thompson suggested that we target specific plumes identified for risk reduction. The carbon tet plume is the most important, since it has the most uncertainty. We definitely need to attack that plume in the workshop.

After a lot of discussion, it was decided that it made sense to postpone this workshop due to a number of activities that are happening over the next several months. There is a national groundwater meeting on November 8-10 for public involvement. On November 5-6 there is an EMSP workshop on the carbon tet remediation roadmap. Marcus Glasper has the action to decide on the topic for the next STCG Management Council workshop.

Attendees

Bill Bonner (PNNL)
Jerry Cammann (CHG)
Dirk Dunning (Oregon)
Linda Fassbender (PNNL)
Bruce Ford (BHI)
Marcus Glasper (DOE-RL)

Mike Goldstein (EPA)
Ron Jackson (BHI)
Ken Kapsi (DOE-RL)
Bob McLeod (DOE-RL)
Roger Ovink (CHI)
Scott Petersen (BHI)
Gordon Rogers (HAB)
Mike Thompson (DOE-RL)
Arlene Tortoso (DOE-RL)
Mike Truex (PNNL)
Jerry White (BHI)
Rob Yasek (DOE-ORP)

Next Meeting

The next Subcon Subgroup meeting was scheduled for October 17. Potential agenda items include:

- Endorsement of FY02 S&T Needs
- SCFA Technical Targets Update